Indian Journal of Plant Sciences ISSN: 2319–3824
An Open Access, Online International Journal Available at http://www.cibtech.org/jps.htm
2020 Vol. 9, pp.57-60/Kalaichelvi
Research Article

ERADICATION OF *LANTANA CAMARA* AND STRATEGIES FOR THE CONTROL OF LANTANA IN HILLY ZONES

***K. Kalaichelvi**
Department of Agronomy,
Agricultural College and Research Institute, Madurai – 625104
**Author for Correspondence: kalaiagronomy@gmail.com*

ABSTRACT
Lantana (*Lantana camara*) is an invasive weed of India and native of South America bearing multicolour flowers used as an ornamental hedge introduced from Sri Lanka to India is now turned out as problematic weeds in hilly areas and plains. *Lantana camara* is a source of fire hazard in hilly areas since it can catch fire even when green. An experiment was conducted to eradicate *Lantana camara*. *Lantana camara* shrubs have been removed by digging the root zone and have been cut mechanically below the crown bud (uprooting up to crown bud) just leaving 2 cm of the root portion in the soil. No regeneration was observed even after receipt of summer showers after three months of mechanical removal. Hence in the forest ecosystem during rainy months this technique may widely be adopted. If the *Lantana camara* bushes could not be digged below the crown bud zone; due to compacted soil, primary branch of *Lantana* has been cut close to the ground and a vertically splitting in to V shape and applied with 2,4 D Na salt paste at 1:1 (w/v) of herbicide in water and glyphosate has been wiped with cotton and swabbed over the surface of the 2,4-D Na salt applied paste. Then the herbicide applied portion would be tied using insulation tape and or using cotton cloth to avoid its intake by wild animals and penetration of rain water. This technique is equally successful without regeneration. Remaining all other techniques recommended in controlling Lantana was not successful as they results in regeneration. Hence, these simple technologies could be upscaled on large scale in eradicating *Lantana camara* in hilly zones.

Keywords: *Lantana Eradication, 2,4-D, Herbicide*

INTRODUCTION
Lantana (*Lantana camara*) belongs to the *verbenacae* family native of South America bearing multicolour flowers used as an ornamental hedge introduced from Sri Lanka to India is now turned out as problematic weeds in hilly areas and plains. It is the weeds of national significance because of its negative impact on biodiversity conservation and wide range of its distribution. Now Lantana escaped in to forests, pastures, cultivable lands and wastelands.

Lantana camara is a source of fire hazard in hilly areas since it can catch fire even when green. Due to its encroachment it easily displaced the natural vegetation. *Lantana* also contains a toxic compound Lantad C which causes hepatic lesions in livestock. Due to its prickly nature, it also used as a fence and from which it has encroached the nearby cultivable fallow land and suppresses the multiplication of other native weeds and made the land unfit for cultivation.

During a survey, it is observed that Lantana is severely infesting the higher altitudes of kolli hills and Nilgiris from foot hills to higher elevation which is known to be land of natural vegetation/medicinal herb. It continues to new habitats within its range and increases its density in hilly zones due to its prolific seed production. *Lantana camara* is a perennial evergreen shrub that it spreads rapidly by its abundant seeds and shallow crown buds. Lantana vegetation in kolli hills, produces flower colour ranges from yellow, orange and pink which may easily controlled when compared to bright red colour as stated by Angiras, 2010. Red flowered Lantana shrub are reported to be dangerous to livestock. Flowering and fruit production are continuous around the year. Lantana, a serious weed of forest trees competes for light and nutrients and forms a dense understorey competing with native flora and limiting natural vegetation. In addition to that Lantana also increases the fuel load for fires since there is more number of dried twigs.

Lantana is heavily branched, low, woody shrub which is seen in rocks and along the tree branches and displaced the natural vegetation. Lantana is hardy weed and difficult to control. Dried twigs can regenerate from the base after the rain. Fruit eating birds are the main cause of spread. Horizontal stems are able to take root from suckers and have been reported that Lantana shrub do not regenerate from damaged roots.

Lantana quickly regenerates from crown buds after cutting or burning and form a dense mat. In India, a spray on glyphosate (1%) on the new growth of the *Lantana* occurring after cutting 6-7 cm length and covering it with fast growing fodder crops proven to be successful technology on the management of *Lantana* in Himachal Pradesh (Angiras *et al*., 1988)). Till date, various control measures have been employed to curb Lantana camara infestations in India, but none have been able to completely curtail its invasion. Control measure involving mechanical methods are coupled with certain drawbacks such as problem of re-growth which is imminent if the rootstock is not removed while weeding (Neena Priyanka and Joshi, 2013). Hence, it is programmed to find alternative simple eradication technique to control *Lantana camara*.

MATERIALS AND METHODS

An experiment was conducted during 2014 at Tapioca and Castor Research Station, Yethapur on different techniques on eradicating *Lantana camara* with out regeneration. A preliminary study was conducted in selected 10 number of plants on digging up to crown buds during rainy period (for easy digging) and Cutting the primary branch at the base close to the ground and a V- shaped cut vertically and applied with 2,4-D paste and swabbing with glyphosate in cotton and tied with an insulation tape for controlling wherever the mechanical removal is impossible and the technology of Australia that applying 2,4-D paste in cut branches and applied with glyphosate foliar spray after regeneration.

RESULTS AND DISCUSSION

Preliminary Study on Lantana camara eradication

1. Mechanical Removal alone

Ten number of *Lantana camara* shrubs have been removed by digging the root zone and have been cut mechanically below the crown bud just leaving 2 cm of the root portion in the soil. No regeneration was observed even after receipt of summer showers after three months of mechanical removal. Hence in the forest ecosystem this technique may widely be adopted. This could be done easily immediately after the receipt of the rainfall and to manage the spreading through seeds, shrubs have to be collected and fired off or can be used as firewood under natural condition. If it is an already established bush; petrol operated saw could be used to cut down the top portion and may be manually dug for uprooting above the ground level.

Nearby tribals can easily be employed and trained for mechanical removal by which we can create additional employment and as well as maintain the biodiversity and ecology.

2. Mechanical Removal along with 2,4 - D Na salt + glyphosate application

If the *Lantana camara* bushes could not be digged below the crown bud zone; in compacted soil, primary branch of *Lantana* has been cut close to the ground and a vertically splitting in to V shape and applied with 2,4 D Na salt paste at 1:1 (w/v) of herbicide in water and glyphosate (15 ml/litre) has been wiped with cotton and swabbed over the surface of the 2,4-D Na salt applied paste. Then the herbicide applied portion was tied with insulation tape and or using cotton cloth to avoid its intake by wild animals and penetration of rain water.

This technique is also highly successful for management of *Lantana* without any regeneration.

3. 2,4 - D Na salt application on cut branches

Secondary branches of *Lantana camara* bush has been cut manually and 2,4 - D Na salt paste has been wiped on the cut branches as adopted in pasture management of Australia but this technique resulted in the regeneration of the cut branches after the receipt of rainfall.

Strategy to be adopted for the eradication of Lantana camara in Kolli hills

Pepper is the major crop being cultivated in kolli hills; lantana seeds are resembles the seeds of pepper hence to avoid the adulteration in forth coming years, it is necessary to eradicate *Lantana camara* from kolli hills besides for the conservation of natural vegetation. Intensity of *Lantana* increases with increase in altitude and separate strategy to be adopted for specific situations considering its density of invasion. In depth survey has to be conducted while initiating the programme and local residents should be involved for all the operations. Since, it is of national concern awareness campaigns have to be conducted for voluntarily involvement in the eradication campaigns. Hence, awareness campaigns have to be conducted for the benefit of forest ecology and biodiversity conservation

For foot hills

Intensity of *Lantana* is very less in foot hills and as well as can easily be controlled by mechanical removal by involving local residents. Lantana hedge should be uprooted below the corm level (crown buds) by cut down the root portion. Since, the monkey population is more in foot hills, the use of herbicides is nullified hence management should be adopted only through mechanical removal and has to be closely watched for its regeneration in the next year for minimising its dispersion in deep forests.

All these removed twigs have to be collected in container and kept in one place for drying to avoid the dispersal through seeds and separately fired off.

For higher altitudes

Wherever digging the plant is impossible, primary branch has to be cut close to the ground and a V-shaped vertical cut and applied with 2,4- D Na salt paste and glyphosate has been wiped with cotton and swabbed over the surface of the 2,4-D Na salt applied paste. Then the herbicide applied portion would be tied using insulation tape or using cotton cloth to avoid its intake by wild animals and penetration of rain water. This technique is also highly successful for management of *Lantana* without any regeneration and can be well adopted in deep forests of kolli hills. These empty places can be replaced by planting of new native trees and grasses during monsoon period. All these removed twigs have to be collected in container and kept in one place for drying to avoid the dispersal through seeds and separately fired off.

For eradication of Lantana live fence in residential hamlets of Kolli hills

Lantana camara which was used as a live fence by farmers of kolli hills form a thick dense mat around the field boundaries. Hence to avoid the further spreading of these weeds over in to the deep forest, these areas have to be cleared off. They could be easily removed either by dozer pushing due to its high density. Then they can be used as fuel wood for the local residents and awareness should be created among the residents on ill effects of *Lantana camara* and necessary steps to control *Lantana camara* in residing areas

From this study it can be concluded that *Lantana camara* shrubs have been removed by digging the root zone and have been cut mechanically below the crown bud (uprooting up to crown bud) just leaving 2 cm of the root portion in the soil. No regeneration was observed even after receipt of summer showers after three months of mechanical removal. Hence in the forest ecosystem during rainy months this technique may widely be adopted. If the *Lantana camara* bushes could not be digged below the crown bud zone; in compacted soil, primary branch of *Lantana* has been cut close to the ground and a vertically splitting in to V shape and applied with 2,4 D Na salt paste at 1:1 (w/v) of herbicide in water in cut portion and glyphosate has been wiped with cotton and swabbed over the surface of the 2,4-D Na salt paste. Then the herbicide applied portion would be tied using insulation tape and or using cotton cloth to avoid its intake by wild animals and penetration of rain water. This is highly successful technique to eradicate Lantana. Remaining all other techniques recommended in controlling Lantana was not successful as they results in regeneration. Hence, these simple technologies could be upscaled on large scale in eradicating *Lantana camara*.

REFERENCES

Angiras NN, Tripathi B and Singh CM (1988). Studies on control of *Lantana camara* var aculeate in mid hills. In: *Proceedings of Seminar on Control of Lantana* and *Ageratum held December 27, 1988 at HPKV, Palampur,* 29-35.

Angiras NN (2010). Studies on control of *Lantana camara* in Himachal Pradesh *In Winter School on Recent Advances in Chemical and Non – Chemical Weed Management in Cropped and Non – Cropped Areas* held at ICAR, New Delhi between 15.11.2010 to 6.12.2010.

Neena Priyanka and Joshi PK (2013). A review of *Lantana camara* studies in India. *International Journal of Scientific and Research Publications,* 3 (10) 1-11.